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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/674,479	11/01/2000	Alfred Busch	CM1758M/VB	1247

7590

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C Brant Cook
The procter & Gamble Company SW68 Box 492
Ivorydale Technical Center
5299 Spring Grove Avenue
Cincinnati, OH 45217-1087

EXAMINER

KUMAR, PREETI

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 01/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/674,479

Applicant(s)

BUSCH ET AL.

Examiner

Preeti Kumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 4-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 18-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1443) Paper No(s) <u>6</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 4-17 have been cancelled. Claims 1-3 and 18-35 are pending.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

3. Claim 3 is objected to because of the following informality: Claim 3 recites "A modified enzyme according to claim 3..." Examiner suggests verifying which claim, claim 3 is to be dependent on. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. With respect to claim 21, this claim is deemed unsearchable for prior art purposes, since the indefinite claim terminology creates great uncertainty as to the actual claim limitations or how to apply any potential prior art. Note that where there is a great deal of confusion and uncertainty as to the proper interpretation of the limitations of a claim, it would not be proper to reject such a claim on the basis of prior art. "As stated in *In re Steele*, 305 R.2d 859, 134 USPQ 292 (CCPA 1962), a rejection under 35 U.S.C. 103 should not be based on considerable speculation about the

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meaning of terms employed in a claim or assumptions that must be made as to the scope of the claims." See MPEP 2173.06.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1-3 and 18-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fowler et al. (US 6,268,196) in view of Schulein et al. (US 6,117,664).

Regarding claim 1, Fowler et al. teach the utility of cellulases derived from *Humicola insolens* or *Trichoderma longibrachiatum* (previously classified as *Trichoderma reesei*) in the treatment of cellulose containing fabrics. See col.8; ln.34, 60-65. Many cellulase enzymes, including cellulases from, for example, *T. longibrachiatum* and *Humicola insolens* are known to incorporate a catalytic core domain subunit which is attached via a linker region to a cellulose binding domain subunit. See col.11;ln.50-55. *Trichoderma spp.* is characterized by a pH optimum of

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about 4.0 to 6.0, an isoelectric point (pI) of from about 5.5, and a molecular weight of about 48 Kdaltons. See col.10; ln. 8-10.

Regarding claim 2, Fowler et al. teach motivation of using a CBH I cellulose binding domain derived from *Trichoderma longibrachiatum* that when used in combination with some endoglucanase (EG) type components, in a ratio of 2.5:1 of CBH I to EG components, the CBH I component of *Trichoderma longibrachiatum* imparts enhanced strength loss to the denim fabric. See col.10; ln.50-55.

Regarding claim 3, Fowler et al. teach that protein analysis of the cellobiohydrolases (CBHI and CBHII) and major endoglucanases (EGI and EGII) of *T. longibrachiatum* has shown that a bifunctional organization exists in the form of a catalytic core domain and a smaller cellulose binding domain separated by a linker or flexible hydrozamino acids. See col.3; ln.19-25. The cellulose binding domain and catalytic core of *Cellulomonas fimi* endoglucanase A (C.fimi Cen A) exhibit a similar bifunctional organization of cellulase enzymes.

Regarding claim 18, Fowler et al. teach a linking region between the catalytically active amino acid sequence of a cellulolytic enzyme EGI and the amino acid sequence comprising a cellulose binding domain. See col.11; ln.50-55.

Regarding claims 19 and 20, Fowler et al. teach that a truncated cellulase derivative encompasses a truncated cellulase core or truncated cellulose binding domain, wherein there may be an addition or deletion of one or more amino acids to either or both of the C- and N- terminal ends of the truncated cellulase or a substitution, insertion or deletion of one or more amino acids at one or more sites

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throughout the truncated cellulase. See col. 11; In.56-65. A truncated cellulase core may include other entities that do not include cellulose binding activity attributable to a cellulose binding domain. The activity of a truncated cellulose binding domain or derivatives thereof as described in the assays using cellulose substrates such as avicel, pulp or cotton. See col. 12, In.43-45; col.13, In. 19-23.

Regarding claims 22-25, 31 and 33-35, Fowler et al. teach that when the detergent composition is a pre-soak composition, the truncated cellulase enzyme is employed from about 0.001 to about 1 weight percent based on the total weight of the pre-soak or pre-treatment composition. See col.28; In.25-30. Also, it is contemplated that compositions comprising truncated cellulase enzymes can be used for restoring color to faded fabrics. See col.28; In.37-43. Fowler et al. also teach that the composition can comprise conventional components used in the pre-soak, i.e., diluent, buffers, other proteases, and the like at their conventional concentrations. See col.28, In.33-36.

Regarding claims 26 and 27, Fowler et al. teach the optional addition of builder components selected from the group consisting of alkali metal salts and alkanolamine salts of the following compounds: phosphates, phosphonates, phosphonocarboxylates, salts of amino acids, aminopolyacetates high molecular electrolytes, non-dissociating polymers, salts of dicarboxylic acids, and aluminosilicate salts. See col.26, In.1-10.

Regarding claim 28, Fowler et al. teach the incorporation of caking inhibitors such as acid salts, clay, finely pulverized silica, calcium silicate and the like. See col.26, In.50-55.

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Regarding claims 29 and 30, Fowler et al. teach the utility of cationic surfactants and long-chain fatty acid salts including saturated or unsaturated fatty acid salts, alkyl or alkenyl ether carboxylic acid salts. See col.25; ln.50-62.

Regarding claim 32, Fowler et al. teach that combination of the cellulase with a bleaching agent further improves the detergenting effects. See col.26, ln.33-39.

However, Fowler et al. do not specifically teach a modified enzyme containing 415 amino acids linked to an amino acid sequence comprising a cellulose binding domain and a cellulose binding domain selected from CBD family 45 from *Humicola insolens*, CBD CenC from *Cellulomonas fimi* and/or CBD Cellulozyme from *Clostridium cellulovorans*.

Schulein et al. teach cellulase variants capable of removing soil from fabric, a detergent composition comprising the cellulase variants, and use of the cellulase variants in detergent compositions. See col.1, ln.12-20. Specifically, regarding claim 1, Schulein et al. teach an endoglucanase amino acid sequence of 415 amino acids from *Humicola insolens*. See col.9; ln.40-45. Also, Schulein et al. teach endoglucanase derived from a strain of *Humicola insolens* having various amino acid sequences may be a component of detergent compositions in general. See col. 13 and 14.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to make a celluolytic EGI enzyme derived from *Humicola insolens* or *Trichoderma reesei* containing 415 amino acids linked to an amino acid sequence comprising a cellulose binding domain, in the detergent composition taught by Fowler et al., with a reasonable expectation of success, because Schulein et al. teach the use of a

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cellulolytic EGI enzyme having 415 amino acids derived from *Humicola insolens* or *Trichoderma reseei* in a similar enzyme containing detergent and further, Fowler et al. teach the use of cellulolytic EGI enzymes in general.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use a cellulolytic EGI enzyme derived from *Humicola insolens* or *Trichoderma reseei*, having a molecular weight of 50 kDa, a pI of 5.5, containing 415 amino acids linked to an amino acid sequence comprising a cellulose binding domain, and the other requisite components of the composition in the specific proportions as recited by the instant claims, with a reasonable expectation of success, because Fowler et al. in combination with Schulein et al. suggest the use of a cellulolytic EGI enzyme derived from *Humicola insolens* or *Trichoderma reseei*, having a molecular weight of 50 kDa, a pI of 5.5, containing 415 amino acids linked to an amino acid sequence comprising a cellulose binding domain, and the other requisite components of the composition in the specific proportions as recited by the instant claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Remaining references cited but not relied upon is considered to be cumulative to or less pertinent than those relied upon or discussed above.

10. Applicant is reminded that any evidence to be presented in accordance with 37 CFR 1.131 or 1.132 should be submitted before final rejection in order to be considered timely.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Preeti Kumar whose telephone number is 703-305-0178. The examiner can normally be reached on M-F 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 703-308-4708. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Preeti Kumar
Examiner
Art Unit 1751

PK
January 23, 2002

GREGORY DELCOTTO
PRIMARY EXAMINER

